Space Weather Forecast

Issued on Tuesday 11 February 2025 at 01:16 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares likely. Chance of Minor Geomagnetic storms (G1).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only slight Common-class flares in the last 24 hours. There are currently eight sunspots on the Earth-facing disc. The spot in the northwest, which has been the most active region in recent times is currently rotating off the northwest disc, with analysis becoming increasingly difficult. Recent imagery still shows some bright magnetic looping suggesting an ongoing flare potential, however this risk will recede as this moves over the limb through Day 1 (11 Feb). The other regions across the disc are mostly smaller and simpler, however a new region in the southeast disc has the potential for further complexity to become visible as this moves into a less oblique viewing angle.

No Earth directed Coronal Mass Ejections (CMEs) were observed from available imagery.

Solar Wind / Geomagnetic Activity: Elevated wind speeds have been observed due a fast wind connection from a coronal hole, with speeds averaging between 550-580 km/s. Interplanetary Magnetic Field, was steady, staying largely weak. The north-south component, was also weak and mainly negative (southwards-directed) with brief positive intervals. Geomagnetic activity was Unsettled to Active (Kp3-4), with a G1/Minor Storms interval observed between 10/0000-0300 UTC, although this were initially reported as Active.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background throughout with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely with isolated Moderate-class flares and a very slight chance of Strong-class flares.

Solar Wind / Geomagnetic Activity: There is a slight chance of two glancing CMEs during the start of Day 1 (11 Feb). A third slow CME left the Sun around 08/0930 UTC, this is considered most likely to miss, passing ahead of Earth, but cannot be completely ruled out for a glancing enhancement on Day 3 (13 Feb). Otherwise ongoing fast winds are expected, with a further coronal hole enhancement likely on Days 2 to 3 (12-13 Feb). Unsettled to Active geomagnetic

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activity is forecast with G1 Minor Storms likely and a slight chance G2 Moderate Storm from any CME arrival Day 1 (11 Feb), and an ongoing chance of G1 Minor Storms Day 2-4 (12-14 Feb).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background throughout with no Solar Radiation Storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	Yes	60	50	50	50
Strong	**G3**	No	5	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	60	60	60	60
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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